

**ABSTRACT**

10 A look up engine 200 comprising a storage means 212a,  
212b for storing a plurality of entries, each entry  
comprising a value and an associated key value, such  
that, in operation, a look up is carried out by  
15 outputting a value which is associated with the stored  
key value which matches an input key value. The look  
up engine 200 comprises a plurality of look up state  
machines 206a, 206b, 206c, 206d connected in parallel  
to enable multiple look ups to be carried out  
20 concurrently. Each entry comprises an associated  
skip value, if the skipped bits of the input key  
value and the associated skip value mismatches, an  
error message is output to indicate lookup failure.  
The entries may be stored in a trie format which is  
constructed by identifying overlapping ranges between  
the plurality of entries; splitting the identified  
overlapping ranges; storing the plurality of entries  
within a trie structure.

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